

Customer No.: 31561  
Application No: 10/709,719  
Docket No.:13114-US-PA

### **REMARKS**

#### **Present Status of the Application**

The Advisor Action dated May 24, 2006 maintained the rejections cited in the Office Action dated March 1, 2006. In essence, the Office Action rejected claims 34-38, 43, 46-49 under 35 U.S.C. 102(b) as being anticipated by Kim et al. (USP 5,252,845). The Office Action has further rejected claims 39-42, 44-45, 50-51 under 35 U.S.C. 103(a) as being unpatentable over Kim in view of Hisamoto et al. (USP IEDM 91).

Claims 34-36, 38-51 remain pending of which claims 34 and 46 have been amended to more accurately describe the invention. Supports for the amendments can be found in specification and the drawings, for example, from [0060] to [0065] and Figures 10 to 16. It is believed that no new matter is added by way of these amendments made to the claims or otherwise to the application.

Applicant has most respectfully considered the remarks set forth in this Office Action. Regarding the anticipation and obvious rejections, it is however strongly believed that the cited references are deficient to adequately teach the claimed features as recited in the presently pending claims. The reasons that motivate the above position of the Applicant are discussed in detail hereafter, upon which reconsideration of the claims is most earnestly solicited.

Customer No.: 31561  
Application No: 10/709,719  
Docket No.: 13114-US-PA

### Discussion of Office Action Rejections

*The Office Action r rejected claims 34-38, 43, 46-49 under 35 U.S.C. 102 (b) as being anticipated by Kim et al. (US 5,252,845, Kim hereinafter).*

Applicants respectfully assert that Kim is legally deficient for the purpose of anticipating claims 34 and 46 for the reasons that each and every element of the claims in issue is not found in the prior art reference.

The present invention teaches substantially, among other things, in claims 34 & 46 "...defining an active area over the substrate to form a semiconductor pillar beside the deep trench capacitor and to form an isolation area, wherein the semiconductor pillar is formed exclusively from the substrate; ...". On the other hand, Kim teaches forming an oxide layer 111 above the polysilicon 110 in the trench (Figure 5g), followed by forming silicon crystal 113 outside the trench by SEG process besides the oxide layer 111 (Figure 5h). In other words, the alleged pillar 113 is not formed by defining the substrate. Further, the alleged pillar 113 of Kim is a silicon layer formed above the substrate 101 outside the trench (col. 4, ln. 41-46, Figure 5h) and is not formed from a part of the substrate 101. The semiconductor pillar of the instant case, however, is defined from the substrate and is formed exclusively from a part of the substrate.

Additionally, claims 38 and 43 details the steps of forming the gate dielectric layer and the word line including the treble gate in which the steps include filling the isolation area with an insulating material; patterning the insulating material to expose a first sidewall of the pillar above

Customer No.: 31561  
Application No: 10/709,719  
Docket No.:13114-US-PA

a predetermined level and ...". Kim, on the other hand, teaches that the formation of the gate dielectric layer and the word line of Kim by forming a gate oxide layer 115 over the silicon crystal 113 formed on the substrate 100 and over the polysilicon 110 that fills the trench, followed by forming the word line 116 on a part of the gate oxide layer that is over the polysilicon 110.

For at least these reasons, Applicant respectfully asserts that Kim fails to teach or suggest the present invention or to render claims 34 or 46 anticipated. Since claims 35-36, 38-45 & claim 47-51 are dependent claims, which further define the invention recited in claims 34 and 46, respectively. Applicants respectfully assert that these claims also are in condition for allowance. Thus, reconsideration and withdrawal of this rejection are respectfully requested.

*The Office Action rejected claims 39-42, 44-45 and 50-51 under 35 U.S.C. § 103(a) as being unpatentable over Kim in view of Hisamoto et al. (IEDM 91, Hisamoto hereinafter).*

With regard to the 103 rejections of claims by Kim in view of Hisamoto, Applicants respectfully submit that these claims defined over the prior art references for at least the reasons discussed above.

Accordingly, even if Kim were combined with Hisamoto, the combination still fails to render claims 39-42, 44-45 and 50-51 unpatentable and that the pending claims 39-42, 44-45 and 50-51 are in condition for allowance. Favorable consideration and allowance of the present application and all pending claims are hereby courteously requested.

Customer No.: 31561  
Application No: 10/709,719  
Docket No.:13114-US-PA

**CONCLUSION**

For at least the foregoing reasons, it is believed that the presently pending claims 34-36, 38-51, are in proper condition for allowance. If the Examiner believes that a telephone conference would expedite the examination of the above-identified patent application, the Examiner is invited to call the undersigned.

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Respectfully submitted,

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